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THE PROTOTYPE CARBON FUND IN LATIN AMERICA: LESSONS LEARNED

Francisco Fernandez-Asin

“Continued global warming is in nobody’s interest, but the simple facts of the matter are that developing countries will suffer the most damage, and their poor will be at an even greater disadvantage. I see the Bank’s role in climate change as providing every opportunity to developing countries to benefit from the huge investment OECD must make in reducing climate change”

James Wolfensohn, World Bank President
United Nation’s General Assembly, June 1997

Introduction

Reducing emissions of carbon dioxide and other greenhouse gases that affect climate change is one of the key challenges facing the international community. The Bank’s Prototype Carbon Fund (PCF) provides a framework for action, learning, and research to demonstrate how greenhouse gas emission reduction transactions can contribute to sustainable development, while lowering the costs of compliance with the Kyoto Protocol—the 1997 agreement to cut industrialized world emissions of greenhouse gases.

The Latin American and the Caribbean (LAC) Region has a growing number of successful Prototype Carbon Fund (PCF) projects (see Figures 1 and 2), that have yielded useful experience for developing additional projects. This note highlights the lessons learned in the Region, to date.

The Prototype Carbon Fund (PCF)

The PCF is a public-private fund established in 2000 and administered by the World Bank acting as Trustee. It operates under the Clean Development Mechanism principles of the Kyoto Protocol to the UN Framework Convention on Climate Change (UNFCCC). The PCF aims to demonstrate the potential of market-based mechanisms for reducing the cost of mitigating climate change. It does this by buying Certified Emission Reductions (CERs) from projects that reduce greenhouse gas emissions in Bank client countries, particularly projects that replace fossil fuels with renewable energy sources and those that improve end-use and supply-side efficiency. In return for their shares in the PCF, developed country governments and private sector companies receive CERs, which they can use towards their obligations under the Kyoto Protocol or domestic regulations.

Figure 1 - Regional Distribution of PCF Project Pipeline

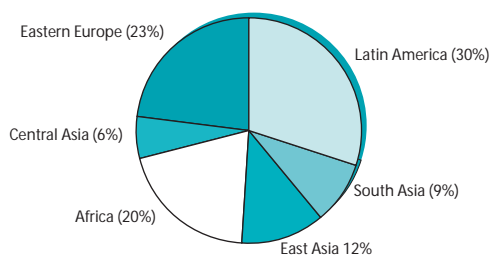
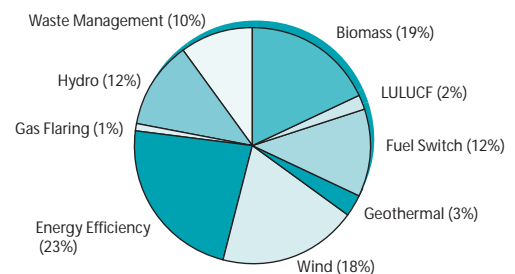


Figure 2 - Technology Distribution of the PCF Project Pipeline



To date, six governments and 17 companies, all from industrialized countries, have contributed funds to the PCF, and have already approved projects with emissions reduction potential of more than \$100 million. PCF projects are all subject to independent validation and verification, and may be potentially certified to receive carbon credits.

In June 2002, Fund participants expanded their contributions to the PCF from \$145 million to \$180 million. These companies see the PCF as a powerful tool for learning how market-based mechanisms can help mitigate climate change.

PCF Projects in LAC

Currently, there are close to twenty PCF projects in the LAC Region under preparation. Most use hydro or wind power, although cogeneration, biomass, geothermal, solid waste management, and gas flaring reduction technologies are also represented.

The first PCF project in LAC to reach the stage of a negotiated Emissions Reductions Purchase Agreement (ERPA), and the third such project in the PCF's history, is the Chacabuquito Hydropower project in Chile. Chacabuquito is a 25 MW run-of-river hydro power plant. It will generate 175 GWh to replace coal/gas energy that would have produced greenhouse gas emissions. The project entails the largest purchase of CERs for the PCF so far; \$6.7 million over the next 14 years.

The Brazil Plantar project was the second one negotiated in the Region, and involves the purchase of \$5.3 million in CERs. Instead of coal fuel in pig iron production, the project will substitute high energy-content biomass and charcoal fuel that will be planted specifically for this purpose. The project is unique in that it also includes additional forestry activities that will offset carbon.

Preparation of the Costa Rica Umbrella Project for Renewable Energy Resources is well advanced. It currently includes three small-scale sub-projects – two windfarms and one hydro power plant, and will result in over \$2 million in CERs.

Colombia Jepirachi Wind Farm is a 20 MW wind project in the North East of Colombia. It will displace 68.3 GWh annually of coal and gas energy for a purchase of \$3.5 million CERs, and bring numerous economic and social benefits to the local indigenous people.

Box 1 - Objectives: What will the PCF produce?

High-Quality Emission Reductions

The PCF is intended to invest in projects that will produce high quality greenhouse gas emission reductions that could be registered with the United Nations Framework Convention on Climate Change (UNFCCC) for the purposes of the Kyoto Protocol. To increase the likelihood that the reductions will be recognized by the Parties to the UNFCCC, independent experts will follow validation, verification and certification procedures that respond to UNFCCC rules as they develop.

Knowledge

By transacting the business of reducing emissions, the PCF will develop a major knowledge base. The PCF will maximize the value of its experience by collecting, analyzing, and disseminating information and knowledge to NGOs, governments, private sector interests, and any other stakeholders involved in the climate change negotiations.

Public-Private Partnership

Finally, PCF resources will be provided by both the public and private sectors. The PCF aims to demonstrate how insights and experience from both sectors can be pooled to mobilize additional resources for sustainable development and address global environmental concerns. The active participation of both sectors ensures that the PCF will operate efficiently and in accordance with the Kyoto Protocol while serving the interests of World Bank client countries.

Nicaragua's Gemina/Bronzeoak Biomass project will produce 2 MW of clean energy for a rice and flour mill that will use its own rice husk waste as fuel. It will avoid methane emissions that result from husk dumping activities and will reduce carbon emissions by replacing electricity in a heavily diesel-powered system. This project is the first component of an umbrella framework to be set up in Nicaragua.

Other projects in the PCF pipeline in LAC include: wind and hydro power plants in Honduras; geothermal and bagasse cogeneration in El Salvador; hydro and geothermal in Guatemala; wind power, gas flaring reduction and sugarcane bagasse cogeneration in Mexico; biomass and solid waste management in Brazil; bagasse cogeneration in Guyana;

gas-to-liquid technology in Peru; hydro in Ecuador; nitrous oxide abatement in Chile; run-of-river hydro in Colombia; and wind farms in Argentina and Jamaica. New project ideas from the Region are being received by the PCF nearly every week.

Lessons Learned

Many lessons have been drawn so far from the implementation of PCF projects in LAC:

First Lesson: Climate-Friendly Market Mechanisms Work
PCF projects not only help mitigate climate change globally, but also catalyze new and additional investments in clean technologies in developing countries. OECD countries are actively looking for investment opportunities in the LAC region in order to help comply with their Kyoto Protocol (KP)

commitments. Some countries develop investment facilities to promote opportunities and encourage their national corporations to invest; others arrange the concession of export credits for local renewable technologies to developing countries. These foreign direct investment flows into LAC bring in cleaner energy and other economic and social benefits.

The introduction of market mechanisms into climate change mitigation is also attracting private players such as commodity and energy traders and bankers to intermediate between carbon buyers and sellers. The prospect of a CER commodity market is boosting competition among selling countries in order quickly to develop the right investment climate to attract buyers. There is also competition among buying countries, eager to position themselves to acquire the scarce available CERs to comply with their own KP requirements or to resell their excess to third countries.

Second Lesson: Carbon Finance works

Higher Rates of Return. PCF projects have demonstrated that carbon finance can be a very useful resource in project financing. Adding the sale of CERs to the project cash flow has increased project Financial Internal Rates of Return (FIRRs) considerably (Table 1). The increase in the FIRR of projects in LAC ranges from 20 to 500 basis points, which translates into relative increases of 2.5% to 70%, increasing their attractiveness for the private sector.



Table 1 - Impact of Carbon Finance on Project Financing (PCF Pipeline projects)

Technology	FIRR Increase (%)
Energy Efficiency/ District Heating	1.4
Wind	0.3 - 1.0
Hydro	0.2 - 0.8
Bagasse	0.5 - 3.5
Biomass with methane kick	Up to 5.0
Solid Waste with methane kick	> 5.0

The methane kick. The increase is exceptional in projects involving methane emission reductions on top of the more usual carbon ERs, due to the higher carbon-equivalence intensity of methane. This “methane kick” generates higher CERs and therefore biomass and solid waste projects benefit the most from carbon finance. Project differences are also due to the particular emissions baselines in each country. Highly carbon-intensive baselines yield higher CERs.

Project Financing. Another financial advantage of carbon finance results from endorsement of projects by the PCF and World Bank. Project financing is not necessarily secured at the time that a project sponsor submits a project idea to the PCF. Letters of intent from PCF have helped secure underlying finance in a number of LAC projects, contributing to their viability.

Third Lesson: PCF Projects catalyze broader Clean Development action.

Even though many LAC countries are moving towards elaborating a Clean Development Mechanism (CDM) strategy, only countries that have succeeded in “pushing” a PCF project through their regulations and institutions are ready to compete in the CER market. CDM requires a fair amount of capacity building and regulation reform in the energy and environmental areas. PCF projects are the catalysts that trigger all those changes, and help fulfill the PCF commitment to “learning by doing”.

Fourth Lesson: PCF projects are good examples of cross-functional World Bank activities.

PCF Projects are typically not just the result of isolated efforts to seek carbon finance in a particular country, but part of a wider World Bank country strategy. For example, the Nicaragua Umbrella project came after FPSI’s efforts to improve rural electrification and to build capacity for the electricity market liberalization process.¹ The Bank is also offering to the Government of Nicaragua the possibility of participating in the Central America National Strategy Study (NSS) program administered by ESSD.² Similarly, the Costa Rica Umbrella Project was conceptualized in the framework of an ESSD Ecomarkets project, and the Colombia Jepirachi project was the fruit of a previous NSS program, which also involves other CDM capacity building projects. Each PCF project requires technical assistance from different Bank units that work together to achieve a common goal, and learn from each other in the process.

Future Plans

The PCF manages \$145 million on behalf of its shareholders. The fund’s management has recently sought an increase of \$35 million from its shareholders to take advantage of the \$180 million maximum fund size. With \$90M already committed in the second year of the investment phase, the success of the fund has also attracted investors to set up new funds. The Dutch Environmental Facility (VROM) has signed an agreement with the World Bank to set up a similar fund to purchase CERs on its behalf for an amount up to \$140M over four years. Other plans are in the making, such as a Community Development Carbon Fund (targeting small projects and small countries, aiming to lower transaction costs through streamlined procedures, see Box 2)); and

a BioCarbon Fund (specializing in land use, land use change and forestry activities, see Box 3). Dialogue is on-going with other governments (Spain and Austria) on setting up bilateral funds similar to the Dutch one. In the near future, it is highly likely that LAC will participate in these new initiatives as one of the leading regions in the Bank.

Box 2 - Linking Climate Change to Biodiversity Conservation The BioCarbon Fund

Under its governing articles, the PCF can only invest a maximum of 10 percent of its funds on activities focused in land use, land use change, and forestry (LULUCF). This mirrors developments under the Kyoto Protocol, where only reforestation and afforestation have been recognized as eligible activities for emissions trading with developing countries under the CDM, although a much wider range of LULUCF projects are potentially eligible for economies in transition under joint implementation.

This wider range of activities, from conservation to sequestration, also has a significant influence on the global carbon cycle. Many opportunities in these areas are likely to be found in the agricultural and forestry sectors. The BioCarbon Fund—a new fund currently in the design and marketing phase—will help improve our understanding of the linkages among climate change, biodiversity conservation and management, and desertification and land degradation. Projects will provide information to the UNFCCC parties as they make decisions about eligibility rules under the CDM in the first commitment period for emissions reductions from 2008 to 2012. The projects will also provide the parties with practice-based insights on activities they may wish to consider for subsequent commitment periods. The BioCarbon Fund will support projects in areas such as improved forest management, agroforestry, improved agricultural practices, the prevention of land degradation, watershed management, and wetland protection and restoration.

The BioCarbon Fund will be launched at the Katoomba Forestry meeting in Tokyo in early November 2002.

About the Author

Francisco Fernandez-Asin is an energy specialist working within the Prototype Carbon Fund Unit of the World Bank's Environment Department. Useful feedback and comments were also received from Charles Feinstein and Odil Tunali Payton.

Additional material for this article was taken from "Environment Matters 2002" (visit <http://www.worldbank.org/environment>) and the website of the Prototype Carbon Fund (<http://www.prototypecarbonfund.org>)

Notes

¹ FPSI is the group in the Bank that deals with financial and private sector institutions.

² ESSD is the Environment, Social and Sustainable Development group in the World Bank.



Box 3 - Enhancing Income Opportunities for the Poor The Community Development Carbon Fund (CDCF)

The Bank is also launching the Community Development Carbon Fund (CDCF), in collaboration with the International Emissions Trading Association (IETA), to ensure that carbon finance might enhance the income opportunities of the rural poor, especially communities in smaller, poorer countries and in small island developing states. Projects may provide communities with either direct or indirect benefits. A community cooperative-based shade coffee project, for example, may directly benefit the livelihoods of the local community. Or, a wind energy facility located on tribal lands that generates electricity for the national grid may provide indirect benefits by using carbon finance to support a clean water or literacy project for the local community.

Both the BioCarbon Fund and the Community Development Carbon Fund will have a target size of \$100 million. The CDCF was launched at the World Summit on Sustainable Development in September.

Useful Links

<http://prototypecarbonfund.org>
<http://www.worldbank.org/climatechange>
<http://www.unctad.org/ghg/>

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MSN I6-604
The World Bank
1818 H Street NW
Washington D.C.

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